

PART A – COVER PAGE

STATE WATER RESOURCES CONTROL BOARD
SFY 2002 Costa-Machado Water Act of 2000
CALFED Watershed Program

Application No. 558

PROJECT TITLE: Orestimba Creek Watershed – Agricultural Water Quality Pilot Program

Project Region	Indicate RWQCB #:	<u>5</u>
Multi-regional Project	Indicate RWQCB #s:	<u></u>
Statewide Project		<u></u>

PROJECT DIRECTOR (Ms., Mr., Dr.):
(one name only) Mr. Parry Klassen 6-7-02

PRINT DATE

LEAD APPLICANT OR ORGANIZATION: Coalition for Urban/Rural Environmental Stewardship (CURES)

TYPE OF AGENCY:

Municipality	Local Agency	*Nonprofit (non-landowner)	Non profit 501c3
<u></u>	<u></u>	<u></u>	<u></u>

Nonprofit (landowner)	Local Public Agency
<u></u>	<u></u>

STREET ADDRESS: 1801 I Street, Suite 200

CITY:	<u>Sacramento</u>	Zip Code:	<u>95814</u>
P.O. BOX:		Zip Code:	<u></u>
COUNTY	<u>Sacramento</u>		
STATE:	<u>California</u>		

PHONE NO.: 559-325-9855 FAX NO.: 559-325-9856

E-MAIL ADDRESS: parryk@attbi.com FEDERAL TAX ID. NO.: 91-1839291

PROJECT TYPE: 79080 (c) (8) – Reduce the discharge of pollutants to state waters from storm water or nonpoint sources

LEGISLATIVE INFORMATION Senate District 12th Assembly District 26th
United States Congressional District 18th

CALFED, RWQCB, or SWRCB STAFF CONTACTED REGARDING THIS PROPOSAL:

Contact:	<u>Shakoor Azimi</u>	Contact:	<u>Jeanne Chilcott</u>
Phone No.:	<u>916-255-3092</u>	Phone No.:	<u>916-255-3088</u>
Dates contacted:	<u>5-6-02</u>	Dates contacted:	<u>2-15-02, 6-5-02</u>

PRIMARY COOPERATING ENTITIES:

Entity Name:	<u>West Stanislaus Resource Conservation District</u>		
Role/Contribution to Project:	<u>Local contact/management, supervision of project activities</u>		
Contact Person:	<u>Norman Crow</u>	Phone No.:	<u>209-837-4230</u>
E-mail address:	<u>crows5@inreach.com</u>		

Entity Name:	<u>California Water Institute</u>		
Role/Contribution to Project:	<u>Research/Economic analysis on management practices</u>		
Contact Person:	<u>Mary McClanahan</u>	Phone No.:	<u>559-278-8468</u>
E-mail address:	<u>mmcclana@csufresno.edu</u>		

Entity Name:	<u>Ducks Unlimited</u>		
Role/Contribution to Project:	<u>Engineering/Design of filtering systems; GIS</u>		
Contact Person:	<u>Patrick Fitzmorris</u>	Phone No.:	<u>916-852-2000</u>
E-mail address:	<u>pfitzmorris@ducks.org</u>		

Entity Name:	<u>Geomatrix Consulting</u>		
Role/Contribution to Project:	<u>Engineering/Water Quality monitoring plan development</u>		
Contact Person:	<u>Timothy Souther</u>	Phone No.:	<u>559-264-2535</u>
E-mail address:	<u>TSouther@geomatrix.com</u>		

WATERBODY/WATERSHED (Include Catalog Number in Section 18 of the ARD):	<u>Orestimba Creek Watershed: Panoche – San Luis reservoir (18040014) and/or Middle San Joaquin-Lower Merced-Lower Stanislaus (18040014)</u>
--	--

GPS COORDINATES FOR PROJECT N/A LOCATION, IF AVAILABLE: _____

FISCAL SUMMARY:

Proposition 13 Funds Requested

\$275,000

Other Project Funds
Total Project Budget

10,000
\$285,000

CERTIFICATION

Please read before signing.

I certify under penalty of perjury that the information I have entered on this application is true and complete to the best of my knowledge and that I am entitled to submit the application on behalf of the applicant (if the applicant is an entity/organization). I further understand that any false, incomplete, or incorrect statements may result in the disqualification of this application. By signing this application, I waive any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent provided in this RFP.

Applicant Signature

Date June 7, 2002

Printed Name of Applicant Parry Klassen

Part B – PROJECT NARRATIVE (10 pages)

Project Context

(a) Watershed description

Orestimba Creek (OC) originates in the Coast Range Mountains in western Stanislaus County, passes through irrigated farmland in the San Joaquin Valley, and terminates at its confluence with the San Joaquin River. The OC watershed encompasses approximately 18,000 acres devoted to production agriculture. The most important crops in the watershed are alfalfa, walnuts, almonds, and dry beans. These crops commonly are grown on medium- to fine-textured soils that are classified as loams, clay loams, and clays. Slopes in the valley floor range from 0% to 2%. Irrigation methods used in the various crops include furrow, flood, sprinkler, and low-volume sprinkler. In general, the watershed can be described as an intensively farmed area characterized by highly engineered water delivery and drainage systems required for large-scale irrigation of crops. The slopes of fields in the region typically fall from west to east, from the coastal mountains toward the San Joaquin River. However, precision land-leveling is commonly practiced, and many community drains exist, both surface and subsurface. Crow Creek is a major underground drain that empties into OC. The drainage pattern for individual fields is not predictable from elevation maps, and the actual drainage from fields into the creek is complex.

(b) Water quality issues in Orestimba Creek watershed

Irrigation return flows from agricultural lands in the OC watershed flow into Orestimba Creek, a tributary to the San Joaquin River (SJR), ultimately reaching the Bay-Delta. More specifically, the lower reach of Orestimba Creek (OC) is an agriculturally dominated stream in Stanislaus County that drains into the San Joaquin River (SJR). Drainage from farmlands, either from surface water flows or storm runoff, can potentially carry pesticides, nutrients, salts and other constituents into OC and subsequently the SJR. These constituents of concern are suspected of causing harm to aquatic organisms. Detections of the organophosphate pesticides diazinon and chlorpyrifos have prompted the listing of Orestimba Creek on the Clean Water Act (CWA) § 303(d) list. The listing means that water quality management plans known as Total Maximum Daily Loads (TMDLs) must be developed for these water bodies by the Central Valley Regional Water Quality Board. A TMDL is a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect individual water bodies through achievement of water quality standards.

Extensive monitoring by various state and federal agencies during the past 10 years shows several constituents of concern in OC including pesticides, nutrients and dissolved salts. Diazinon and chlorpyrifos have been detected at elevated concentrations in the San Joaquin River and its tributaries, including OC, during both the winter dormant spray period and the summer growing season when irrigation return flows occur (Foe and Connor, 1991; Foe, 1995, 1997). Diazinon and chlorpyrifos have also been listed as CALFED constituents of concern for the Central Valley and Delta because they can exceed known toxic levels to sensitive organisms. The main uses for these two OP insecticides in the OC watershed areas are as winter-applied, dormant orchard sprays for almonds and stone fruits. Winter rain storms shortly after applications can potentially wash the applications from orchards into

surface waters. In-season (spring and summer) applications are made for insect control in cotton, alfalfa and walnuts and are carried to surface waters either through spray drift or irrigation return flows.

Current regulatory activities are focusing on irrigation return flows in the SJR watershed in anticipation of the January 2003 expiration of the Waiver of Waste Discharge Requirements for Irrigation Return Flows. An important component of the recent resolution (5-01-236) adopted by the California Regional Water Quality Control Board Central Valley Region in September 2001 is implementing voluntary monitoring and control activities conducted by agricultural organizations. Activities are also commencing on the Clean Water Act requirement to develop TMDLs for pesticides, dissolved oxygen (DO), salts and boron for the SJR. Addressing the quality of stream flow as it reaches the confluence to the San Joaquin is a critical link to a total upper and lower watershed restoration approach.

A multi-year water quality study of Orestimba Creek was undertaken in 1999 by Dow AgroSciences and Novartis (now Syngenta) (Poletika, Havens, et al 1999). The primary objective of the 3-year project was to identify specific agricultural pesticide use patterns and practices that contribute the bulk of off-site chemical movement into surface water. The study involved an evaluation of pesticide movement in both winter storms and in summer irrigation return water flows. Three commonly used organophosphorus (OP) insecticides were monitored (diazinon, chlorpyrifos and methidathion) along with weather data, stream discharge, and pesticide use in the watershed.

Based on use patterns practiced in the study area, the authors concluded that spray drift and natural runoff contributed to movement of OP insecticide residues into Orestimba Creek. Further analysis of field-specific observations may also implicate irrigation tailwater in transport of chemical mass. Changes in application practices and in field drainage management may therefore have value in controlling off-site chemical movement and reducing chemical concentrations in the water column. From a mass loading perspective, export of pesticide mass peaks into the San Joaquin River was greater during the winter rainy season, even in a year when dormant applications appeared to be less than usual. Management Practices (MPs), such as cover crops, designed to reduce winter storm pesticide runoff from dormant treated orchards, may help to decrease this loading into the San Joaquin River basin.

As noted by the authors, farmers and landowners can implement management practices in their fields that can potential decrease or eliminate transport of certain pesticides into the watershed. Various treatment technologies also show promise in reducing constituents in surface drainage water. Widespread adoption of management practices and/or treatment technologies by farmers who drain into the watershed have potential to reduce constituent loads.

(c) Watershed efforts in addressing water quality issues in OC watershed.

Numerous projects and activities have been undertaken in the OC watershed and in western Stanislaus County to address water quality impairments from sediment. The West Stanislaus Hydrologic Unit Area Project (HUA) was organized in 1991 in response to the U.S. Department of Agriculture's 1990 Water Quality Initiative, an implementation project designed to enhance water quality impaired by agricultural practices. The HUA objective is to reduce non-point source water pollution, mainly DDT isomers, from irrigated agricultural soils in the HUA that are reaching the San Joaquin River. A number of BMPs were implemented in an attempt to help meet the HUA objective including the implementation of a Mobile Irrigation Lab in 1993. The project was conceived after agencies, partnering on the HUA project, recognized the need to have consultants working closely in the fields with growers in efforts to improve water quality. Improvements made by growers to their irrigation systems and irrigation water management were determined to be needed to improve water quality, resulting in the initiation of the Mobile Irrigation Lab project to help growers identify specific improvement areas.

Several management practices identified as effective in achieving the HUA objective include gated irrigation pipe, cover crops, sediment basins, and improved irrigation management. In addition, a new technology polyacrylamide (PAM), was identified as a potential management practice. PAM is a long chain, anionic polymer that had been used as a soil amendment as early as the 1950s but was determined at that time not to be economical. The results of applying PAM were immediate and significant, with PAM providing increased water infiltration and less soil loss from fields due to silting. Field trials quantified the reduction in erosion at 95% with increases in water infiltration up to 30%.

(d) Project justification

The levels of pesticides, nutrients, salts and boron detected in OC watershed clearly show a need for reducing the transport of these constituents into the watershed. Activities by the West Stanislaus RCD can be credited with advancements in reducing sediment loads into the San Joaquin River but more efforts are needed that are directed at controlling pesticides and nutrients concentrations in OC. More efforts are also needed on a watershed-wide basis that will ensure that management practices are selected in an economically efficient manner and implemented in fields where they hold the most promise for positive impact on water quality. This project intends to take a methodological approach to addressing water quality issues in OC watershed and facilitating the transfer of information and solutions through local entities and stakeholders with the assistance of project collaborators. In particular, the approach of this project coincides with the CALFED objective of managing pesticides through existing regulatory agencies and volunteer cooperation of pesticide users such that the beneficial uses of the waters of the Bay-Delta and its tributaries are not impaired by toxicity originating from pesticide use.

CURES is ideally positioned and experienced to implement this project. The group is a non-profit organization formed to address environmental stewardship issues relating to the safe use of crop protection products. CURES operates by forming coalitions with interested groups in agriculture, industry, academia and government to develop funding and work on solutions to pesticide and

nutrient-related problems. The CURES Board of Trustees is made up of individuals committed to this goal. Parry Klassen, the CURES Executive Director, is himself an orchard grower whose career in agricultural communications spans 20 years. CURES has numerous past and current projects related to water quality, promotion of management practices to farmers and pesticide stewardship and is fully capable of implementing the tasks and objectives described in this proposal (*see Part H – Supporting relevant documents*). In particular, CURES is closely involved in outreach efforts on management practices to farmers and crop consultant for protecting surface water in the Sacramento River watershed, including a soon to begin project funded by the CALFED Watershed Program. In the winter 2002, CURES in conjunction with the OP Focus Group of the Sacramento River Watershed Program published booklets and gave numerous grower presentations outlining management practices for protecting surface water. This information will be the basis for some management practices studied and promoted in this project. CURES is also working closely with the San Joaquin River Agriculture Implementation Group (AIG) that was formed to assist in developing an implementation plan for the pesticide TMDL on the San Joaquin River.

II. Project Description

The objective of this project is to develop a strategy to promote commercial farming operations' voluntary use of management practices and treatment technologies in efforts to reduce or eliminate pesticide, nutrient and other contaminant loads carried by irrigation return flows into the Orestimba Creek and subsequently the San Joaquin River. The project will evaluate possible irrigation return flows pollutant control actions and promote cooperative efforts in identifying and implementing the most appropriate site-specific reduced risk practices.

Examples of source control (in-field) measures include:

Management practices for efficient use of pesticides and nutrients to reduce pollutant loading in irrigation return flows.

Irrigation scheduling to reduce impact of irrigation return flows on receiving waters.

Microsprinklers and other low volume irrigation systems to reduce loading and return flow volume.

Injecting PAM into irrigation water to reduce offsite transport of sediment.

Return systems to re-circulate irrigation water for reduced return flows.

Examples of watershed (regional or multi-property) management measures include:

Irrigation drain water circulated through either settling ponds and/or vegetative biofilters;

Filtration treatment technologies of constructed canal-type structures with a filtering media of leonardite or other low-cost compounds to reduce contaminant loads.

This project is designed as a Phase I – Capacity Building and Design. Phase II- Implementation of management practices in OC watershed will be developed after Phase I is completed and efficient management practices appropriate for OC watershed have been selected and developed. Participating farms in the watershed will be identified in Phase I.

(a) Conceptual framework

The conceptual model undertaken by this project entails the development of an economic analysis as means of selecting feasible and economically efficient management practice to minimize the impact of irrigation returns flow on the region's receiving waters (*see part H*). An adaptive management approach is taken in the development and application of the economic analysis/selection approach. Phase I and Phase II, to be implemented at the completion of Phase I, are interconnected and designed as an iterative process. Phase I will assess and prioritize a range of potential actions in the OC watershed that are most likely to provide positive impact to the region's water quality and ecological health. Phase II will implement the recommended actions. The selected management actions will then be monitored and assessed to gain information and refine both the selection process developed in Phase I and improve the management of the watershed.

Phase I – Capacity building and Design

Phase I seeks to address water quality issues by developing a selection approach to aid in identifying economically effective and feasible management practices on commercial farming operations to reduce or eliminate irrigation return flows impact on Orestimba Creek and subsequently the SJR. In developing a selection method, the project will improve the understanding of effective water quality management in the watershed and encourage cooperation among local farmers and community groups. The project will be followed by the application of this approach to the Orestimba Creek watershed (Phase II). The MP selection method developed in this project will have two key components: (a) applicability and feasibility and (b) economic effectiveness in reducing pollutant loading in irrigation return flows.

Applicability and feasibility: The project will identify existing use of MPs by farm operations in the watershed. These MPs will be evaluated to determine their effectiveness in reducing pollutant loading in return flows to the Orestimba Creek. In addition, MPs that are currently not used in the watershed but have been shown to be successful in other watersheds will be reviewed for their applicability to the region and its agriculture make up.

Economic effectiveness: The economic effectiveness of operating all MPs that are deemed feasible in the Orestimba Creek watershed will be reviewed and included in developing an economic framework for selecting an appropriate management approach in the OC watershed. MPs will be rated based on pollutant load reduction/\$.

Phase I of the project will include an outreach campaign targeted at farmers and crop consultants in the Orestimba Creek watershed. Most of the outreach activities for the target audience will occur between November 1 and March 30 during each year of the two-year project. This is the time when growers, Pest Control Advisors (PCAs), ag workers, and other agricultural related professionals attend meetings for continuing education credits needed for licensing and other informational needs, such as pest

control technology updates. Farmers in Orestimba Creek watershed typically attend meetings throughout either Stanislaus or Merced counties. From November through March of each year of this project, CURES will coordinate and organize presentations designed to inform growers about the pesticide and nutrient runoff problem, review of practices designed to minimize off-site movement of pesticides and provide updates on this and other watershed projects dealing with pesticide runoff.

Outreach materials on management practices will be distributed during informational presentations and through targeted mailings.

Materials will also be provided to farmers at local retail chemical dealers in Stanislaus or Merced counties and through County Agricultural Commissioners, County Farm Bureaus, commodity groups, irrigation districts and other community outlets. Additionally, promotion of events and meetings will take place through use of internet websites, such as the CURES site and other sites of commodity organizations and local groups. Included in the materials will be information on local contacts or agencies that can provide resources and expertise for evaluating farm sites and adopting the various practices being promoted. Working through project collaborators to contact targeted farmers will ensure a higher probability of transferring information and technology and foster future community involvement in protecting the watershed ecosystem and water quality. Additionally, local collaborators, in particular the crop consultant PCAs, will provide credibility and access to agricultural pesticide end-users, as well as technical knowledge. The PCA, a target of our message in both Phase I and II, will play a pivotal role in encouraging adoption of management practices to protect water quality as many of them also function as agronomists.

CURES and project collaborators will also work closely with the Department of Pesticide Regulation (DPR) and its Environmental Monitoring Program to ensure the tasks undertaken in this project meet agency goals of environmental protection. DPR has signed a Management Agency Agreement with the State Water Resources Control Board that created a process outlined in "Pesticide Management Plan for Water Quality." The plan relies on a 4-stage process for protecting beneficial uses of surface water from potential adverse effects of pesticides. This proposed project meets the goals of stage 1 (rely on education and outreach efforts to communicate pollution prevention strategies) and Stage 2 (efforts involve self-regulating or cooperative efforts to identify and implement the most appropriate site-specific reduced risk practices.) This proposal coincides with ongoing DPR efforts to address the effects of dormant sprays on surface water.

Phase II- Implementation of Management Practices in Orestimba Creek Watershed

Phase II will be designed to directly affect the quality of irrigation return flows entering state waters while at the same time preserving the productivity of surrounding farmland and improving watershed health. Phase II will be developed based on information gathered and investigated in this project to aid in the selection of efficient management practices appropriate for the OC watershed. The primary goal of Phase II is to motivate growers to integrate permanent changes in their farm management practices that have the best potential to protect surface water quality. Implementation of these practices is expected to minimize the off-site movement of pesticides into the watershed. To achieve this goal, in Phase II farms that are currently using best management practices will be identified for field tours and as demonstration farms so farmers can view installations and review cost estimates for adopting management practices.. The project collaborators will work in cooperation with existing programs in the San Joaquin watershed to expand the number of sites accessible to farmers. By organizing tours/demonstration meetings at farms or test plots using management practices that protect water quality, farmers will be given an opportunity to observe the latest technology in commercial and localized conditions.

Success of Phase II will be determined by monitoring the changes that take place with regard to adopting management practices that protect water quality and the improvement to water quality in the watershed. CURES will also work closely with the SRWP, NRCS, local irrigation districts, and county Farm Bureaus to facilitate selection of demonstration farms and assist in promoting to members localized field tours, demonstration farms, and events.

Of note is the importance of information gained from Phase I and II that can be useful in the Sacramento River watershed. Orestimba Creek and the San Joaquin River watershed as a whole share with the Sacramento River watershed a problem of OP runoff into surface waters from dormant orchard sprays. In the Sacramento River watershed, projects are currently underway that are developing information on orchard practices to reduce OPs levels in storm water runoff. These projects, funded by grants from the CALFED Watershed Program and U.S. EPA 319h, are managed by the California Dried Plum Board and Ag Research Consulting. The projects involve organizing demonstration sites for studying and showcasing pest control and orchard management practices to protect surface water for prunes, almond and peaches in the Sacramento and Feather River watersheds. The demonstration orchards are intended to show growers that alternatives to OP dormant applications or management practices used with OPs to reduce or eliminate off-site movement can be cost effective as well as effective in addressing pest management needs. In conjunction with those projects, the CALFED Watershed program is funding a grant to CURES to organize grower outreach on the management practices developed by the other projects. Information developed in those projects will be useful to this OC project and vice versa. CURES involvement in both watershed projects will ensure that information is shared and used wherever possible and appropriate.

Another upcoming CALFED project that will develop information of interest to this project is in the Ecosystem Restoration Program - 2002 Proposal Solicitation Package. The project is proposed by University of California, Davis (proposal #212) and is titled

“

DisplayText cannot span more than one line!..”

III. Project Intent and Expected Outcome

(a) Meeting CALFED objectives

The proposed project encompasses numerous CLAFED and Proposition 13 goals related to improving water quality and watershed ecosystem health. The project supports CALFED goals through local capacity building in facilitation, planning, monitoring and technical expertise as well as developing sustainable, locally led programs and projects. The following is a list of goals addressed by the proposed project:

Strategic Goal 6 of the Ecosystem Restoration Program to “Improve and/or maintain water and sediment quality conditions that fully support healthy and diverse aquatic ecosystems in the Bay-Delta watershed and eliminate, to the extent possible, toxic impacts on organisms in the system, including humans.”

Practices identified and selected to be incorporated into the overall watershed management strategy in the OC watershed, to be implemented in Phase II, will lead to a reduction in pesticide and nutrient levels in the watershed’s receiving waters.

Reduction in pesticide and nutrient loading will lead to improved water quality conditions needed to support healthy and diverse aquatic ecosystems in the region.

CALFED Draft Stage 1 Implementation Plan, MR5 goal to “Ensure that restoration is not threatened by degraded environmental water quality.”

Stage 1 includes actions to reduce impacts of current-use pesticides (including diazinon and chlorpyrifos) through developments and implementation of Best Management Practices, for both urban and agricultural uses, as well as helping to resolve the low DO problem in the lower SJ River. Nutrient and pesticide load reduction through implementation of management practices can directly benefit this implementation plan goal.

Goal SJ5 to “develop understanding and technologies to reduce the impacts of irrigation drainage on the San Joaquin River and reduce transport of contaminant loads carried by the San Joaquin to the Delta and the Bay.”

The project will collect, summarize and report on MP effectiveness and cost information to be used in an extensive education and outreach programs of Phase I and Phase II of this project.

CALFED “priority action” to facilitate corrective actions are addressed in this project’s task by means of MP evaluation to control off-site movement, identification of financial support to help implement the most cost-effective methods and development of a monitoring plan to evaluate MP effectiveness once implemented.

Proposition 13 legislative objectives to (4) monitor water quality conditions and assess the environment health of the watershed; (5) use geographic information systems to display and mange the environment data describing the watershed; (6) prevent watershed soil erosion and sedimentation of surface waters; (8) and otherwise reduce the discharge of pollutants to state waters from storm water or nonpoint sources.

This project will fulfill proposition 13 legislation by attaining watershed improvements in the area of water quality through the use of geographic information system database to both evaluate the watershed conditions and track the adoption of management practices by the agriculture community.

(b) Community Involvement

Crows Landing is a small unincorporated farming community in western Stanislaus County made up primarily of farmers, farm workers and their families. In the 1990 U.S. Census, Crows Landing was identified as an economically disadvantaged community. The economic stability of Crows Landing is dependent on maintaining the productivity of agricultural farmland in the area. Crows Landing has no viable means of sustainable economic support other than agriculture. This project seeks to improve the quality of irrigation return flows into state waters from non-point sources while at the same time preserving the productivity of surrounding farmlands and improving watershed health. This objective will be address by calling on farmers in the watershed to actively participate in the implementation of MPs in Phase II, to follow this project, through an extensive outreach program.

An important component of this project will be the coordination and joint partnership between the Coalition for Urban/Rural Environmental Stewardship (CURES) and the West Stanislaus Resource Conservation District. Additional collaborators and subcontractors include the California Water Institute, Ducks Unlimited, Inc., Geomatrix Consultants, Inc. and the Orestimba Flood Control District (*see H for details*). This watershed partnership plans to address restoration activities in the Orestimba Creek watershed that will preserve the economic strength of the nearby agriculture-dependent community of Crows Landing.

(c) Support for Local Decision Makers

The project collaborators have identified landowners with a willingness to install management practices on their lands or allow access to existing installations for the purpose of evaluating the effectiveness of these practices. The inclusion of local landowners presents an opportunity for community decision-making that will produce beneficial effects both environmentally and economically for the Crows Landing area as well as the surrounding communities in the San Joaquin River watershed. The local Crows Landing community will be involved in all levels of the project, from designing and implementing a practical approach to the reduction of pollutants in the Orestimba Creek watershed to the sensible and prudent allocation of funds for the project needs. Local groups include the Orestimba Flood Control District, the newly formed Orestimba Creek Watershed Group made up of local landowners, and the West Stanislaus Resource Conservation District. The project will be designed in a practical way with local input to allow for possible expansion in the future to other small communities in the San Joaquin River watershed. This project

will highlight those management practices with the highest potential for reducing or eliminating pesticides, nutrients and other contaminant loads carried by irrigation return flows entering into Orestimba Creek. These practices will be communicated to farmers, agriculture professionals, regulatory agencies, and irrigation districts. This project will continue to coordinate with the San Joaquin River Management Program (SJRMP) and utilize the SJRMP forum for identifying and discussing project goals and objectives for the San Joaquin River system.

Other local stakeholders who will provide assistance and input to local decision makers in this project are the commodity groups that represent the targeted crops in the watershed; the Stanislaus County Agricultural Commissioner; the major retail sellers of fertilizers and pesticides who operate in the Orestimba Creek watershed; the regional chapter and state organization representing PCAs (California Agricultural Production Consultants Association); the irrigation districts operating in the project area; among other local groups (*see complete list under H*). These people represent farmers in the Orestimba Creek and San Joaquin Valley primary source of information about agriculture, irrigation and crop production techniques. This project will facilitate efforts to provide solutions to the non-point source problem from irrigation return flows and storm water runoff while availing itself to the wealth of expertise afforded by this close relationship. This project will also coordinate with other CALFED program elements such as the UC Pesticide/Water Quality interdisciplinary approach that is currently funded by the CALFED Ecosystem Restoration Program. The strength of the stakeholders who participate in the San Joaquin Ag Implementation Group as it works through a long term pesticide TMDL implementation plan offers assurance that these efforts will continue beyond the timeframe of this project.

(d) Technology Transfer

Phase I will develop cost and funding source information on relevant management practices. Sources of this MP information include: existing materials on water quality protection developed by CURES (*see attachment "Qualifications" for list of publications*); the U.C. Integrated Pest Management program (UC-IPM); management practices for orchards and row crops developed by Community Alliance of Family Farmers; Biological Integrated Orchard systems for prunes and peaches which develops methods of pest control with minimal use of pesticides; and local expertise on irrigation and pesticide/nutrient management. Subsequently, this information will be distributed to landowners through various outreach approaches including literature published in a farmer-friendly format (along with distribution of existing information from programs listed above) and presentations at grower and crop consultants meetings in the San Joaquin Valley region. Many of these practices are ready to be implemented by farmers.

The economic framework developed in this project will be based on information gathered either through field evaluation or literature review. Data on the feasibility, pollutant removal effectiveness and economic efficiency of various management practices as well as the selection method to be developed in this project can be applied to the greater San Joaquin River watershed, the Sacramento River watershed and other watersheds in which similar agriculture conditions exist.

(e) Project goals and measures of Success

The project's performance will be evaluated based on the following criteria:

Project goal: Improve regional cooperation among governmental, environmental and nonprofit organizations in the watershed.

Indicator of success: Increased number of participating agencies in developing the selection approach and Phase II-implementation.

Project goal: Improve the community's awareness on the subject of regional water quality issues and available management practices to reduce or eliminate storm water or irrigation return flows impacts on water quality in Orestimba Creek through outreach efforts.

Indicator of success: The effectiveness of outreach efforts will be evaluated based on the percent of farmers reached (percent of regional acres) who chose to carry out voluntary programs in Phase II.

Project goal: Increase adoption of MPs throughout the Orestimba Creek watershed.

Indicator of success: Funding opportunities and technical assistance will be essential in ensuring that management practices are adopted in the region. The project will identify funding and technical assistance sources that will be available to farmers in the watershed. The success of this goal will depend on the magnitude of funding solicited for management projects and the percent of the needed funds that are met through these efforts.

Project goal: Provide assessment of management practices through development of appropriate monitoring programs.

Indicator of success: the usefulness of the monitoring program will be measured in terms of completeness of data for efficient selection of management practices and level of success in Phase II.

The project performance monitoring plan will provide documentation to support the assessment of meeting the project goals.

Part C – PROPOSED SCOPE OF WORK (5 pages)

Background and Goals

(a) Project justification

Irrigation return flows and storm water runoff from agricultural lands in the watershed flow into Orestimba Creek, which drains into the San Joaquin River (SJR) and ultimately the Bay-Delta. Extensive monitoring during the past 10 years shows various constituents of concern in the Orestimba Creek including pesticides, nutrients and dissolved salts. The organophosphate (OP) pesticides, diazinon and chlorpyrifos, have been detected at elevated concentrations in the San Joaquin River and its tributaries during both the winter dormant spray period and the summer growing season when irrigation return flows occur (Foe and Connor,

1991; Foe, 1995, 1997). Current regulatory activities are focusing on irrigation return flows in the SJR watershed in anticipation of the January 2003 expiration of the Waiver of Waste Discharge Requirements for Irrigation Return Flows. An important component of the recent resolution (5-01-236) adopted by the California Regional Water Quality Control Board Central Valley Region in September 2001 is implementing voluntary monitoring and control activities conducted by agricultural organizations. Activities are also commencing on the Clean Water Act requirement to develop Total Maximum Daily Loads (TMDLs) for pesticides, dissolved oxygen (DO), salts and boron for the SJR. Addressing the quality of stream flow as it reaches the confluence to the San Joaquin River is a critical link to a total upper and lower watershed restoration approach.

(b) Project goals and objectives

The primary goal of this project is to develop a strategy to promote commercial farming operations' voluntary use of management practices and treatment technologies in efforts to reduce or eliminate pesticide, nutrient and other contaminant loads carried by irrigation return flows and storm water into the Orestimba Creek and subsequently the San Joaquin River. More specifically, the project seek to:

Improve regional cooperation among governmental, environmental and nonprofit organizations in the watershed.

Improve the community's awareness on the subject of regional water quality issues and available management practices to reduce or eliminate stormwater and irrigation return flows impacts on water quality in OC through outreach efforts.

Increase adoption of MPs throughout the OC watershed.

Provide assessment of management practices by properly designing monitoring programs.

The project will accomplish the following objectives:

Develop and design a **filtration treatment system** to address water quality in Orestimba Creek;

Identify effective and economically feasible management practices on riparian and upland farmlands in the Orestimba Creek watershed to **reduce loading of constituents of concern** to the riverine system;

Develop a reliable database in tracking the use of management practices in the watershed and evaluate their potential effectiveness in reducing pollutant loading to support on-farm management decisions. Make this information available to local farmers through farmer meetings, publications and tours;

Develop reliable **economic information on the costs and benefits** for management practices to be used by farmers and policymakers in their selection and support, adoption and/or implementation of various mitigation strategies;

Increase awareness levels and emphasize the crucial need for voluntary adoption of effective management practices with the goal of reducing agricultural irrigation runoff impacts to regional waters through community outreach; and,

Build public/private partnerships to collaborate with local agencies, stakeholders and firms to enhance the project management, outreach, and effectiveness. Once this project is past the pilot stage, cost sharing opportunities exist with various local, state and federal agencies.

(c) Anticipated Outcomes

A significant outcome of this project will be the development of treatment technologies to reduce sources and loading of turbidity, nutrients, and toxic substances that contribute to reducing the safety of drinking water supplies to the SJR.

This project will support a regional approach to restoration activities within the CALFED solution area by developing management practices to be implemented on other farms with similar crops and soil types on other tributary systems within the entire San Joaquin River watershed.

This project will implement a long-term approach that will allow for maintenance and monitoring of the implementation of installations and management practices for a timeframe of 10-20 years.

This project will help to insure that the Orestimba Creek watershed will preserve the economic strength of the nearby agriculture-dependent community of Crows Landing and the surrounding small communities for future generations.

This project will also build a solid base of understanding about effective water quality management by enhancing local capacity building through a joint partnership between the Coalition for Urban/Rural Environmental Stewardship (CURES), the West Stanislaus Resource Conservation District, the Orestimba Flood Control District, the Orestimba Creek Watershed Group the California Water Institute, Ducks Unlimited, Inc. and others. Since the Flood Control District has authority to levy fees within the district, this may become a component in a long-term strategy for developing implementation support for water quality sustainability.

Proposed work to be performed

Task 1-3 Administration, etc.

Task 4. Identify management practices to reduce constituents of concern to receiving waters in the Orestimba Creek watershed. (Note: information gathered will be used for Task 5, Economic Analysis)

Task Description: Various management practices for reducing chemical constituents' impact on receiving water quality and ecological health, both in-field and at watershed levels, are available for use in agricultural settings. However, in order for these practices to be adopted, information on their effectiveness and applicability for local conditions must be evaluated and presented to the farmers in the region. Improved understanding of management practices' effectiveness in removing pollutants of concern will ensure that the appropriate measures are adopted with the most positive effect on the region's water.

The use of the information gathered in this task is not limited to the OC watershed and can be used in developing watershed management plans in other agricultural settings throughout the greater San Joaquin River watershed as well as the Sacramento River watershed. The following actions will be taken as part of Task 4:

Attend coordination meetings with CURES and other project collaborators.

Research and document the effectiveness of potential MPs in reducing pesticide and nutrient loading in the watershed. MPs will be appropriate for the physical conditions within the Orestimba Creek watershed and to the major crops grown in the region, such as alfalfa, dry beans, tomatoes, walnuts, stone fruits and almonds.

Determine the installation and operating costs of a biofiltration system currently operating in the Orestimba Creek watershed.

Locate farm sites in the Orestimba Creek watershed that currently utilize MPs in efforts to reduce constituents of concern.

Identify new farm sites within the Orestimba Creek watershed that might be suitable for installation of MPs that will reduce constituents of concern.

Design samples of template irrigation scheduling programs with the potential to reduce constituents of concern in the watershed.

These irrigation scheduling programs will reflect the crop and soil make up of the OC watershed.

Assess the costs (installation as well as operation and maintenance) of existing management practices used in the watershed.

Task Deliverables:

Summary of the effectiveness of potential MPs.

Report on the installation and operating costs of the biofiltration system.

Report listing the identified farm sites and describing their associated MPs.

Report summarizing potential sites and the MP proposed for each site.

Sample designs of irrigation scheduling programs and cost sheets.

Cost estimates for the identified MPs.

Success criteria: The success of this task depends on the completeness of the reports summarizing the removal effectiveness and costs of management practices considered.

Task 5. Develop an economic framework for MP selection and application.

Task description: The economic framework developed in this task will help in identifying the most economically efficient management practices for the OC watershed. The economic framework will consider capital, operation and maintenance costs, removal efficiency of pollutants of concern and applicability to the OC watershed. The selection of management practices will then be developed using both the economic framework and the information gathered in Task 4. The economic framework will be revisited in Phase II as new information on applied management practices is obtained through monitoring.

Outline the rationale and methods for economic analysis. Identify relevant landowner costs and benefits. Cost parameters will include under costs, installation, operation and management, changes in land productivity. Benefit parameters will be based on improvement in water quality parameters and potential improvements in farm management or yields. In addition to these factors, other farm management considerations such as alternative penalties or other courses of action (land use change), the expected time horizon of each practice, and risks or shortfalls of each management practice will also be developed into the framework for selecting and evaluating management practices. Installation, operation and management costs, and system efficacy benefits will be based on data collected in Task 4.

Develop a framework based on cost-benefit methods for the selection and implementation of management measures in the Orestimba Creek watershed as part of phase II. This framework will present a method of evaluating system efficacy with respect to direct (installation, maintenance, etc) and indirect (productivity changes) costs and benefit outcomes.

Deliverable:

Report on framework to be used in Phase II through both written explanation and example.

Success criteria: The success of this task will be the integration of management practice efficacy, installation feasibility, and farm management impact. The acknowledgement of the impact of the new management practice on farm yields is an important part of landowner adaptation of the management principles.

Task 6. Plan and design of vegetated biofiltration system

Develop a preliminary design of vegetated biofiltration system and collect data on existing systems. Perform site visits, topographical and biological surveys, and collect and analyze water samples from the source water. Preliminary site information to be incorporated into a preliminary design for peer review and review by the CALFED ERP Independent Science Board.

Develop a physical engineering and final design. Prepare a detailed design that can be used for constructing the vegetated biofilter. Site specific information such as, land use, water supply, water quality, topography, soil type, existing ecosystem, etc. will be incorporated into the design.

Develop a biological and ecological design. This task will include the design of canal-type structures which will include vegetative biofilters. Certain wetland plants have been identified in filtering pesticides and nutrients from waterways and these plants will be propagated along the constructed channel. A Leonardite filtering media, that has also shown to filter out contaminants, will also be incorporated into the filtering system. Perform environmental documentation assessment.

Task deliverables:

Detailed conceptual plan of vegetated biofiltration system.

Construction plan for the vegetated biofiltration system.

Schematic and written report of biofiltration system.

List of necessary environmental documentation with cost detail and estimated time schedule.

Success criteria: The complete design of vegetated biofiltration system

Task 7. Develop Monitoring Plan for in-field installations of biofiltration systems or management practices

Task description: Develop a draft plan for monitoring water quality at field biofiltration systems; and revise draft into final plan to be used in field monitoring.

Attend Coordination Meetings to obtain updates on project progress; status of project schedule and budget; results of recent activities; and planned project activities.

Develop Monitoring Plan: Prepare draft monitoring plan to evaluate effectiveness of biofiltration systems and watershed management practices. The plan will review available irrigation return flow water monitoring programs in Orestimba Creek watershed and evaluate them for compatibility with this project's objectives; will identify location and layout of systems to be monitored including the irrigated area, identify the number and location of monitoring points (typically located to sample the irrigation water upstream of the point of application, the tail water upstream of the biofiltration system, and the tail water downstream of the biofiltration system), describe field sampling equipment and methods, describe field/laboratory analytical methods, and describe the data presentation format. Monitoring will include: a flow estimate; field measurement of electrical conductance, pH, and dissolved oxygen; and laboratory analysis for chlorpyrifos, diazinon, and boron. The monitoring plan will include a sampling and analysis plan and a quality assurance project plan (frequency and objectives for blank and duplicate samples) in accordance with EPA protocols.

Cost Analysis and Time Frame: Concurrent with the draft monitoring plan, also developed will be a cost estimate to identify labor, equipment, and laboratory service unit costs and the total costs anticipated for implementation of the monitoring plan. A schedule will identify time frame and frequency of planned monitoring efforts, schedule for summarizing and evaluating monitoring results and preparing final report.

Draft Monitoring Plan Review: The draft monitoring plan and draft cost analysis/time frame will be presented at a project Coordination Meetings for review and comment by the collaborators.

Final Monitoring Plan: Upon receipt of comments on draft monitoring plan and cost analysis/time frame, Geomatrix Consultants will revise draft plan to incorporate comments and prepare a final Monitoring Plan and a final Cost Analysis/Time Frame.

Task Deliverables:

Meeting summaries

Draft Monitoring Plan

Draft Monitoring Budget and Schedule

Report on comments

Monitoring Plan including Cost Analysis/Time Frame

Success criteria: The utilization of the monitoring plan in evaluating discharges from fields where various management practices are implemented.

Task 8. Develop a management and GIS database.

Task description: Develop a data and GIS management system to support project management and information dissemination.

Database information will include (tentative):

Receiving waters in the Orestimba Creek watershed.

Farm operations with irrigation return flows draining into the watershed's receiving waters.

Participating farm operations in Phase II implementation of MP (types of MP).

Water quality monitoring sites in the watershed.

Develop watershed maps with information on MP use and its impact on the region's water for outreach efforts.

Develop database to be used in tracking the progress of Phase II.

Task deliverables:

Pertinent maps and data input and analysis

Success criteria: The utilization of the GIS maps and data for outreach efforts and tracking of management practices adopted in the OC watershed.

Task 9. Conduct outreach programs to encourage judicious use of BMP based on economic and efficiency measures.

Task description: The outreach component of this project is critical in disseminating information and enlisting farmers in the community to apply management practices in their farm operations (Phase II- Implementation).

Design and develop presentation materials that accurately relate the cost effectiveness of management practices recommended for the Orestimba Creek watershed.

Conduct agricultural water quality outreach to local farmers and crop consultants and continued development of the Orestimba Creek Watershed Group.

Design a Phase II Strategy to address water quality issues in the region for use by the Orestimba Creek agriculture community.

Identify additional farmers willing to participate in Phase II - Implementation and encourage adoption of management practices on their properties.

Task deliverables:

Slide Show. Produce a slide show on management practices for meeting presentations in the watershed.

MPs Informational Booklet. Produce a booklet on management practices (MPs) for distribution to farmers, crop consultants and other interested parties in the watershed. The booklets will provide a description of the key MPs and its requirements along with references to further studies or information; summarize the California Water Institute management practice evaluation and economic analysis, cost breakdowns and technical evaluation of the MPs; and, provide contract information for funding sources to assist in installing MPs.

Watershed Map. A poster map of the Orestimba Creek watershed will be published showing waterways and other pertinent information. Map to be included as a handout at meetings and in mailings to farmers with riparian fields or fields with drainage systems leading to the Orestimba Creek and San Joaquin River.

Website. Website operated and managed by CURES will be expanded to include project updates, schedules of events and information on existing and new MPs included in the project.

Meeting Agendas and Summary Reports

Draft Phase II Strategy Plan

Permission for Access on Private Lands where MPs are located.

Success criteria: Increased number of farms/Percent of farm acreage in the watershed willing to participate in Phase II – Implementation. Increased awareness level of water quality issues among farmers and community groups in the region.

Task 10 – Prepare draft and final reports.

10.1 Prepare complete and timely reports on tasks and activities.

Literature cited

Foe, C. and V. Connor. 1991. San Joaquin watershed bioassay results, 1988-90. Staff Report. Central Valley Regional Water Quality Control Board. Sacramento, CA.

Foe, C. 1995. Insecticide concentrations and invertebrate bioassay mortality in agricultural return water from the San Joaquin Basin. Staff Report. Central Valley Regional Water Quality Control Board. Sacramento, CA.

Foe, C. 1997. Toxicity identification evaluations of orchard dormant spray storm runoff. Staff Report. Central Valley Regional Water Quality Control Board. New Series No. 7.

N. N. Poletika, P. L. Havens, C. K. Robb, R. D. Smith, "Organophosphorous Insecticide Concentration Patterns in an Agriculturally Dominated Tributary of the San Joaquin River," Ch. 19 in "Agrochemical Fate and Transport: Perspectives and Scale of Study," Ed. By T. Steinheimer, L. Ross, T. Spittler, *Amer. Chem. Soc. Symposium Series* No. 751 (1999).

Target completion dates (assuming 7-03 contract execution date)

Task No. Deliverables	Target Completion
Task 1: Project Administration	Ongoing
1.2 Quarterly/Monthly Progress Report	By 10 th of month
1.5 Contract Summary Form	3 months after contract execution
List of subcontracted tasks, good faith effort documents, quarterly/monthly utilization reports	3 months after contract execution
1.7 Subcontractor documentation	Monthly
1.8 Expenditure/invoice projections	Every 6 months
1.9 Project survey form	2 months before completion of project
Task 3: Quality Assurance Project Plan	As needed
Task 4: ID management practices	1-04
Task 5: Design economic analysis	6-04
Task 6: Design biofiltration system	12-03
Task 7: GIS and data base management	7-04
Task 8: Design monitoring plan	9-04
Task 7: GIS and data base management	7-04
Task 8: Design monitoring plan	9-04
Task 9: Outreach program	3-05
Task 10: Final Report	6-05

Part D – Budget Summary Sheets-

PART D1 - BUDGET SUMMARY SHEET – TASK BUDGET BREAKDOWN

	Proposition 13 Funds	Other Project Funds	Total Budget
Task 1 – Project Administration	<u>\$33,101</u>	<u>\$</u>	<u>\$33,101</u>
Task 2 – CEQA/NEPA Documents and Permits	<u></u>	<u></u>	<u></u>
3. Task 3 – Quality Assurance Project Plan	<u>4800</u>	<u></u>	<u>4800</u>
4. Task 4 – ID management practices	<u>29,000</u>	<u></u>	<u>29,000</u>
5. Task 5 – Develop economic analysis	<u>21,000</u>	<u></u>	<u>21,000</u>
6. Task 6 – Design biofiltration system	<u>46,394</u>	<u></u>	<u>46,394</u>
7. Task 7 – GIS and data base management	<u>30,811</u>	<u></u>	<u>30,811</u>
8. Task 8 Design monitoring plan	<u>31,673</u>	<u></u>	<u>31,673</u>
9. Task 9 Outreach program	<u>67,810</u>	<u>10,000</u>	<u>77,810</u>
8. Task 10 – Draft and Final Reports	<u>8400</u>	<u></u>	<u>8400</u>
TOTAL BUDGET	<u>\$274,989</u>	<u>\$10,000</u>	<u>\$284,989</u>

PART D2 - BUDGET SUMMARY SHEET – LINE ITEM Budget (Parts D1 and D2 combined not to exceed 2 pages)

	Proposition 13 Funds	Other Project Funds	Total Budget
Personnel Services	<u>\$81,010</u>	<u>\$10,000</u>	<u>\$91,010</u>
Operating Expenses	<u>21,600</u>	<u></u>	<u>21,600</u>
Property Acquisitions	<u></u>	<u></u>	<u></u>
Equipment	<u></u>	<u></u>	<u></u>
Furniture	<u></u>	<u></u>	<u></u>
Portable assets	<u></u>	<u></u>	<u></u>
Electronic data software/hardware	<u></u>	<u></u>	<u></u>
Processing equipment	<u></u>	<u></u>	<u></u>
Miscellaneous	<u></u>	<u></u>	<u></u>
Professional and Consultant Services	<u>160,878</u>	<u></u>	<u>160,878</u>
Contract Laboratory Services	<u></u>	<u></u>	<u></u>
Construction Expenses	<u></u>	<u></u>	<u></u>
General Overhead	<u>11,501</u>	<u></u>	<u>11,501</u>
8. TOTAL BUDGET	<u>\$274,989</u>	<u></u>	<u>\$284,989</u>

Part E – project map

PART F –

Environmental INFORMATION FORM

NEPA/CEQA

Will this project require compliance with CEQA, NEPA, or both? Yes_____No__x__

If you checked “no” to question 1, please explain why compliance is not required for the actions in this proposal. *This is a planning and outreach project only.*

If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies).

CEQA Lead Agency N/A
NEPA Lead Agency N/A

Please check which type of document will be prepared.

	CEQA		NEPA
Categorical Exemption	<u>x</u>	Categorical Exclusion	<u>X</u>
Initial Study	<u></u>	Environmental Assessment/FONSI	<u></u>
Environmental Impact Report	<u></u>	Environment Impact Statement	<u></u>

If you anticipate relying on either or both the Categorical Exemption or Categorical Exclusion for this project, please specifically identify the exemption and/or exclusion that covers this project. *This is a planning and outreach project.*

If the CEQA/NEPA process is not complete, please describe the estimated timelines and cost for the process and the expected date of completion. *N/A*

If the CEQA/NEPA document has been completed:

What is the name of the document?_____

Please attach a copy of the CEQA/NEPA document cover page to the application.

Please indicate what permits or other approvals may be required for the activities contained in your proposal and which have already been obtained. Please check all that apply.

LOCAL PERMITS AND APPROVALS	Needed?	Obtained?
Conditional use permit	No	
Variance	No	
Subdivision Map Act	No	
Grading permit	No	
General plan or Local Coastal Program amendment	No	
Specific plan approval	No	

Rezoning	No	
Williamson Act Contract cancellation	No	
Local Coastal Development Permit	No	
Other	No	
STATE PERMITS AND APPROVALS	Needed?	Obtained?
Scientific collecting permit	No	
CESA compliance: 2081	No	
CESA compliance: NCCP	No	
1601/03	No	
CWA 401 certification	No	
Coastal development permit	No	
Reclamation Board approval	No	
Notification of DPC or BCDC	No	
Other	No	
FEDERAL PERMITS AND APPROVALS	Needed?	Obtained?
ESA compliance Section 7 consultation	No	
ESA compliance Section 10 permit	No	
Rivers and Harbors Act	No	
CWA 404	No	
Other	No	
PERMISSION TO ACCESS PROPERTY		
Permission to access city, county or other local agency land. If "yes," indicate the name of the agency: _____ No _____	No	
Permission to access State land. If "yes," indicate the name of the agency: _____ No _____	No	
Permission to access federal land. If "yes," indicate the name of the agency: _____ No _____	No	
Permission to access private land. If "yes," indicate the name of the landowner (if multiple landowners, indicate how many individuals will be involved and what percentage have already granted permission: _	Yes; Mickey Saso, William Greg Cerutti, Glen Crow, Norman Crow)	

PART G – LAND USE QUESTIONNAIRE

PART - LAND USE QUESTIONNAIRE

Do the actions in the proposal involve construction or physical changes in the land use? Yes____ No__x__

If you answered "yes" to # 1, describe what actions will occur on the land involved in the proposal.

If you answered “no” to # 1, explain what type of actions are involved in the proposal (i.e., research only, planning only).
Planning and outreach on a watershed management strategy only.

How many acres of land will be subject to a land use change under the proposal? None_____

What is the current land use of the area subject to a land use change under the proposal? What is the current zoning and general plan designation(s) for the property? Does the current land use involve agricultural production?

Current land use _____
Current zoning _____
Current general plan designation _____
Does current use involve agricultural production? Yes____ No____

Is the land subject to a land use change in the proposal currently under a Williamson Act contract?
Yes____No _n/a____

What is the proposed land use of the area subject to a land use change under the proposal? N/a

Will the applicant acquire any land under the proposal, either in fee (purchase) or through a conservation easement? Yes____
No__X____

If you answered “yes” to 6, describe the number of acres that will be acquired and whether the acquisition will be of fee title or a conservation easement:

Total number of acres to be acquired under proposal _____
Number of acres to be acquired in fee _____
Number of acres to be subject to conservation easement _____

For all lands subject to a land use change under the proposal, describe what entity or organization will manage the property and provide operations and maintenance services. N/a

Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal? Yes__x____ No____

For land acquisitions (fee title or easements), will existing water rights be acquired? Yes____ No__n/a____

Does the applicant propose any modifications to the water right or change in the delivery of the water?
Yes____ No_x____

If “yes” to 10, please describe the modifications or changes.

Part H – Supporting relevant documents

Conceptual Framework

Qualifications

This project will be organized and managed by the Coalition for Urban/Rural Environmental Stewardship (CURES). Several tasks and sub-tasks will be subcontracted to the California Water Institute, Ducks Unlimited, Geomatrix Consultants and the West Stanislaus Resource Conservation District.

CURES

CURES is a non-profit organization formed to address environmental stewardship issues relating to the safe use of crop protection products. CURES (www.curesworks.org) operates by forming coalitions with interested groups in agriculture, industry, academia and government to develop funding and work on solutions to pesticide and nutrient-related problems. The CURES Board of Trustees is made up of individuals committed to this goal. Parry Klassen, the CURES Executive Director, is himself an orchard grower whose career in agricultural communications spans 20 years. CURES has numerous past and current projects related to pesticide stewardship and is fully capable of implementing the projects described in this proposal. CURES relies on the financial

management expertise of Springer & Schletewitz Accountancy Corp., Fresno, to assist CURES in tracking budgets and administering funds of all projects. This firm is experienced in complex budget management for large agricultural firms and various small and large businesses.

An independent Board of Trustees chaired by Len Richardson, editor of *California Farmer* magazine, sets priorities for CURES. Additional CURES board members include; Lon H. Records, President, Target Specialty Products; Jim Poorbaugh, Vice President, Monrovia Nursery; R. Mark Layman, Division Manager, Helena Chemical Company; Dennis Kelly, Syngenta.; and Bryan Stuart, Dow AgroSciences.

CURES Executive Director, Parry Klassen, is responsible for managing the project and tasks outlined in this proposal. He is well known by many in the local San Joaquin River watershed community. He also has extensive experience in publication development and outreach program development as an editor of a monthly agricultural magazine, director of public relations campaigns targeted to farmer audiences and owner/manager of a communications consulting business. CURES, under his direction, has conducted many stewardship programs involving pesticide education and outreach throughout California, with most of its emphasis in water quality protection in the San Joaquin and Sacramento River watersheds. Mr. Klassen will be the fiscal agent responsible for administering the funds with the accounting and project auditing performed by Springer & Schletewitz Accountancy Corp., Fresno.

CURES Research Director, Rick Sandberg, will be responsible for coordinating demonstration farm activities in the project and assist in production of publications. Mr. Sandberg is a licensed Pest Control Advisor (PCA) and agronomist working with cotton, vegetable and orchard growers in Fresno and Merced Counties. He holds a Bachelors of Science and Masters degree in Plant Science with emphasis on soils and irrigation from California State University, Fresno. Mr. Sandberg has firsthand knowledge, understanding and experience in the principles and practices of irrigation scheduling in cotton, tomatoes, grapes, and almonds as well as pest control in cotton, tomatoes, melons, alfalfa, grapes, and almonds. He also is an experienced agricultural writer. Previous projects of this type, funded either by CALFED or other programs:

CURES is at the final contract approval stage of a CALFED Watershed Program grant for the Sacramento River watershed (Contract at General Services awaiting final execution as of 6-7-02; contract #4600001694). This three-year, \$308,000 CALFED grant entitled "Promotion of Farming Best Management Practices and Calibration Technology to Mitigate OP Pesticide Runoff into the Sacramento River Watershed" will support several components: presentations by CURES at continuing education meetings for growers and crop consultants; publication of orchard best management practice literature; and organizing field days around the demonstration farms. The focus of the project is management practices to reduce or eliminate diazinon runoff from almond, plum and peach orchards after winter dormant sprays.

The Sacramento River Watershed Program, Organophosphate Pesticide Focus Group retained CURES to organize a grower outreach program on protecting water quality in the Sacramento Valley in 2000-2001. This program consisted of CURES Executive Director Parry Klassen giving 19 presentations that described the pesticide runoff problem, the current regulatory framework, and a review of farm management options being developed by the OPFG. Between October 2000 and March 2001, a combined audience of more than 2500 growers and PCAs in the Sacramento River watershed heard the presentations. Local newspapers and farm trade publications also provided media coverage, further expanding the audience exposed to the SRWP outreach efforts.

The Sulfur Task Force, made up of the manufacturers, distributors and users of sulfur in California, retained CURES to create a dusting sulfur stewardship program in California. Dusting sulfur is widely used in the state on grapes and row crops. Increasing complaints about sulfur drift in recent years prompted the CA Department of Pesticide Regulation in November 1999 to ask sulfur registrants to modify sulfur labels to address drift and implement a statewide grower stewardship program. The Sulfur Task Force and CURES published a 4-page booklet entitled "Sulfur Best Application Practices" and distributed more than 20,000 copies May 2000 to grower groups and farm chemical dealers in California. This booklet is one of several projects CURES developed for the task force to inform growers about managing sulfur drift near sensitive areas. A Spanish language version is in the works as is a version for aerial applicators. CURES also developed a grower meeting presentation that was heard by more than 2000 growers at various grape and row crop organization meetings since January 2000.

CURES developed and organized a water quality presentation targeted to urban professional pesticide applicators between November 1999 and April 2000. More than 2700 commercial pesticide applicators in California heard the CURES presentation on protecting water quality. Stewardship presentations were given at seven Pesticide Applicator Professional Association (PAPA) training meetings, through funding from RISE (Responsible Industry for Sound Environment). The presentation described the water quality issue, the impending Clean Water Act regulations (TMDLs), and Best Management Practices that can reduce the movement of pesticides into water. A similar project was sponsored by the Sacramento Regional County Sanitation District in 2001-2002 where Mr. Klassen gave presentations at continuing education meetings for pest control advisors in Sacramento, Modesto and Stockton. That project will continue in 2002-2003.

The Metam Sodium Task Force began its second year program with CURES to develop and distribute stewardship materials and promote stewardship practices for growers and applicators in the West who use metam sodium biocide. CURES worked with the Task Force to create stewardship booklets on various application techniques along with educational slide shows for training meetings and other materials.

CURES has given a number of seminars entitled “Managing Pesticide Drift: Understanding Your Options,” the most recent at grower meetings organized by the Sutter County Agricultural Commissioners office and San Luis Obispo County Ag commissioner’s office. Speakers from makers of high-tech sprayers and nozzles also participated in the half-day training and demonstration event for growers and applicators on the Central Coast and Sacramento Valley. The farmworker training manual “Proteccion de su Salud: Proteccion de Trabajadores Expuestos a Pesticidas” was published in May 2001 by CURES and the California Plant Health Association. More than 105,000 copies were distributed to workers through Western Farm Press newspaper and by government, rural health, and farm worker organizations in the West.

CURES has developed and distributes numerous additional brochures and booklets on management practices for reducing pesticide runoff including:

Orchard Practices for Protecting Surface Water, a booklet outlining management practices for dormant sprays and growers of almonds, prunes, peaches and cherries.

Orchard Air Blast Sprayers – Tips and Techniques: Protecting Water Quality, a stewardship booklet for orchard sprayers.

Field and Row Crop Sprayers – Tips and Techniques: Protecting Water Quality, a stewardship booklet for field and row crop sprayers

Mixing and Loading Crop Sprayers - Tips and Techniques: Protecting Water Quality, English and Spanish Language versions.

Residential Pest Control Landscape Management - Tips and Techniques: Protecting Water Quality.

Keeping Pest Control Products out of Creeks, Rivers, and the Ocean – Homeowner Tips: Protecting Water Quality, a brochure for homeowners.

Tip Sheet for Urban Applicators: Protecting Water Quality.

Website where CURES materials are available for downloading or ordering (www.curesworks.org).

AIG and Project Collaborators

CURES will also rely on the collaboration and active participation of San Joaquin River Ag Implementation Group (AIG) to guide development and implementation of most activities in this proposal (CURES is coordinating organization for the AIG.) The AIG is participating in the development of an implementation plan for the San Joaquin River Total Maximum Daily Load (TMDL) for chlorpyrifos and diazinon.

Current confirmed collaborators for this proposal include:

Almond Board of California;
California Agricultural Production Consultants Association;
California Alfalfa and Forage Association;
California Dried Plum Board;
California Plant Health Association;
California Tomato Research Institute;
California Tree Fruit Agreement;
California Water Institute;
Center for Irrigation Technology;
Dow AgroSciences;
Helena Chemical Co;
Makhteshim-Agan;
San Joaquin River Group;
San Joaquin River Dissolved Oxygen Steering Committee;
San Joaquin Valley Agricultural Commissioners and Sealers Association;
Stanislaus County Farm Bureau;
Stanislaus County Resources Conservation District;
Syngenta Crop Protection;
Natural Resources Conservation Service (NRCS); Wilbur-Ellis Co.;
University of California Integrated Pest Management program (UC-IPM);
Wilbur-Ellis Company.

Project Subcontractors

Below are subcontractors who will perform specific tasks in this proposal. Biographies of key personnel who will actively work on this project are listed after each description. The watershed coordinator for the West Stanislaus Resource Conservation District, Norman Crow, will also assist in oversight of the activities in this project.

California Water Institute

The California Water Institute was formed in October 2000 with funding from the Proposition 13 Water Bond. The mission of CWI is to provide a place where agriculture, urban, and environmental interests can be brought together to develop a shared vision of how our water resources will be utilized in an unbiased, open, collaborative process. The goals of the institute are:
To carry out concise, comprehensive studies that will provide the direction for better future uses and conservation of California's waters;

To promote practices that will enhance and preserve California's water resources and their quality;

To serve as a center for research, education, planning, policy evaluation, and information transfer; to communicate the results of its research and studies with the residents of California;

To collaborate with agencies and institutions in California to seek a positive resolution to California's complex water problems.

CWI works in close collaboration with the California State University system and the Center for Irrigation Technology. Current CWI projects cover a range of areas including: evaluation of biological oxygen demand (BOD) loading rates for land application of food processing wastewater in a contract awarded by the EPA; providing technical support and supplying qualified students to work as scientific aides for a study with the California Department of Fish and Game High Mountain Lakes Research; and providing project management and administrative services to the Central Valley Regional Quality Control Board to integrate the current TMDL and NPS pollution control programs associated with agricultural activities. Staff and scientists associated with the Institute are also conducting research on water-related issues, including evaluation of dairy manure as a fertilizer for feed crops, air injection into buried drip irrigation in tomatoes and peppers, and return flow and reuse of irrigation water.

Mary McClanahan is the Resource Specialist at CWI, which is based at California State University, Fresno (CSUF). She works with diverse groups having an interest in water-related issues in the San Joaquin Valley and throughout the state, and has over 20 years experience in the field of natural resource assessment and management, including establishing grass buffers to control erosion. She has developed, managed, and conducted research projects assessing impacts to terrestrial and riparian systems, and developed restoration plans for highly altered riparian systems. She has a Bachelors of Science degree in Range Management and a Master's degree in Plant Science with an emphasis on nutrient cycling and soil ecology from CSUF.

Ellen Burnes is an Assistant Professor in the Department of Agricultural Economics at CSUF. Her research focuses on the valuation and management of renewable natural resources with a specific interest in the interface between agriculture and the environment, and the role that regulations play in determining optimal agricultural strategies. Ms. Burnes holds a Ph.D. in natural resource economics from Oregon State University. In Oregon, she evaluated water quantity and quality issues on a governor's task force to research and write *The State of the Environment in Oregon*: a cross-discipline examination of ecosystem and human relations across the state. She holds an MBA from the University of Texas at Austin with a focus on natural resource management and has worked with the Business Council for Sustainable Development for the Gulf of Mexico where she developed guidelines for an integrated management plan for the Gulf.

Tim Jacobsen has worked in agricultural irrigation for 20 years as a designer and installer of drip systems and as an irrigation consultant. He earned a Bachelor of Science degree in soil science from Cal Poly, San Luis Obispo and his MS in plant science from CSUF. He is currently working for the Center for Irrigation Technology at CSUF where he is responsible for coordinating educational seminars on topics related to irrigation.

Dr. Mark Somma is an Associate Professor of Political Science in the Department of Political Science at CSUF. Dr. Somma is also on the graduate faculty of the Master's Program in Public Administration and serves on the Kenneth L. Maddy Institute Executive Committee. He has conducted numerous surveys, using a variety of methodologies, among such diverse groups as police officers, farmers and ranchers, and environmentalists. Much of his survey research has been published in political science and public administration journals, including published research on West Texas irrigation politics and policy.

West Stanislaus Resource Conservation District

Norman W. Crow, WSRCD Watershed Coordinator and fifth generation farmer from Crows Landing, CA, is a grower of diversified vegetable and row crops, fruit and nut tree crops. Mr. Crow has been a Director and Chairman of the West Stanislaus Resource Conservation District (WSRCD) for over 25 years and a proactive leader of sediment reduction of runoff from irrigated farm land. He has authored or co-authored more than eight studies on water quality issues. Currently, Mr. Crow is Watershed Coordinator for the East and West Stanislaus Resource Conservation Districts. His top priority is improving water quality of the San Joaquin River and its tributaries. Mr. Crow earned an A.S. in Plant Science from Modesto Junior College and a Bachelor of Science in Agricultural Economics and Business Management from U.C. Davis.

Geomatrix Consultants, Inc.

Founded in 1984, Geomatrix Consultants, Inc. is an employee-owned firm of consulting engineers and scientists known for their excellent technical qualifications in a wide spectrum of disciplines: water resources, hydrogeology, geotechnical and earthquake engineering, environmental sciences and engineering, and decision analysis. Geomatrix' specialized expertise includes hydrologic and hydrogeologic investigation and evaluation, water resources development and management, numerical modeling, probabilistic modeling, performance optimization, chemical and process engineering, toxicology, risk assessment, regulatory compliance, and litigation support. Geomatrix is a recognized leader in the consulting field; consistently ranked in the top 200 design firms nationwide by Engineering News Record.

For this project, Geomatrix will include a collaboration of two senior staff:

Mr. Timothy G. Souther is a California Registered Environmental Assessor with more than 25 years of professional experience in assessment/remediation of pesticides in soil, air, and water.

Dr. Martin E. Spongberg is a California Professional Engineer with more than 13 years of professional experience in geology, hydrogeology, and surface water hydrology. This team currently manages a significant portion of the CalTrans state-wide storm water monitoring program, which includes monitoring for pesticides. The proposed project team has the particular expertise and experience needed to develop a defensible and cost-effective monitoring program for the CURES-Orestimba Creek project.

Ducks Unlimited

Ducks Unlimited, Inc. (DU), is a national non-profit organization that administers approximately \$118 million of restoration project funds on an annual basis. The organization is the world's largest private waterfowl and wetlands conservation organization. The Western Regional office in Rancho Cordova, CA employs experienced and highly qualified engineers and biologists to ensure the best design and construction. Comprehensive environmental review and monitoring is conducted for all projects.

Brendan J O'HaraDucks Unlimited Inc, GIS/Remote Sensing Analyst. Mr. O'Hara possesses a diverse set of skills in GIS and Remote Sensing technology. Educated at California State University, Sacramento, earning a Bachelor of Arts Degree in Geography, Mr. O'Hara is currently employed by Ducks Unlimited as a GIS and Remote Sensing Analyst where he has managed many projects encompassing many disciplines of landcover and spatial analysis.

Orestimba Creek Watershed Group

Concern about water quality issues in the San Joaquin Valley has led to the formation of the Orestimba Creek Watershed Group. This Watershed Group, still in initial stages of development, includes a Board of Trustees made up of local landowners and farmers who live and work in the watershed. Norman Crow, watershed coordinator for Stanislaus Resource Conservation District and a farmer in the watershed, has committed to organizing the group under as a 501 c3, non-profit organization. The goal of the group is to organize and manage programs that will lead to improved water quality in the watershed while preserving the productivity of farmland in the region